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Assignment 4

CML

SY-2020-21

saving variables

MATLAB R2020a - academic use

HOME PLOTS APPS EDITOR PUBLISH VIEW

FILE NAVIGATE EDIT BREAKPOINTS RUN

Editor - C:\Users\abhij\Documents\MATLAB\A4_save_variables.m

```
1 %file handling assignmen no. 4
2
3 x=linspace(-pi,pi);
4
5 y=cos(x);
6
7 %saving variables
8
9 save myvar x y -ASCII -append
10
11 clear vars
12
13 load myvar x y -ASCII
14 plot(x,y)
15 disp(x)
16
17
18
19
```

Command Window

```
>> A4_save_variables
Columns 1 through 10
-3.1416 -3.0781 -3.0147 -2.9512 -2.8877 -2.8243 -2.7608 -2.6973 -2.6339 -2.570
Columns 11 through 20
-2.5065 -2.4430 -2.3796 -2.3161 -2.2526 -2.1891 -2.1257 -2.0622 -2.0000 -1.9375
Columns 21 through 30
-1.8750 -1.8125 -1.7500 -1.6875 -1.6250 -1.5625 -1.5000 -1.4375 -1.3750 -1.3125
Columns 31 through 40
-1.2500 -1.1875 -1.1250 -1.0625 -1.0000 -0.9375 -0.8750 -0.8125 -0.7500 -0.6875
Columns 41 through 50
-0.6250 -0.5625 -0.5000 -0.4375 -0.3750 -0.3125 -0.2500 -0.1875 -0.1250 -0.0625
Columns 51 through 60
0.0000 0.0625 0.1250 0.1875 0.2500 0.3125 0.3750 0.4375 0.5000 0.5625
Columns 61 through 70
0.6250 0.6875 0.7500 0.8125 0.8750 0.9375 1.0000 1.0625 1.1250 1.1875
Columns 71 through 80
1.2500 1.3125 1.3750 1.4375 1.5000 1.5625 1.6250 1.6875 1.7500 1.8125
Columns 81 through 90
1.8750 1.9375 2.0000 2.0625 2.1250 2.1875 2.2500 2.3125 2.3750 2.4375
Columns 91 through 100
2.5000 2.5625 2.6250 2.6875 2.7500 2.8125 2.8750 2.9375 3.0000 3.0625
```

Figure 1

UTF-8 script Ln 15 Col 8

14:58 04-09-2020

displaying variables

MATLAB R2020a - academic use

The image shows the MATLAB R2020a interface. The Editor window displays a script named `A4_display_var.m` with the following code:

```
1 disp(x)
2 disp(y)
3
4 % another example
5 name='ALICE'; age=12;
6 z=[ name, ' will be ', num2str(age), ' this year '];
7 disp(z)
```

The Command Window shows the output of the script:

```
Columns 46 through 54
    0.9595    0.9754    0.9874    0.9955    0.9995    0.9995    0.9955    0.9874    0.9754

Columns 55 through 63
    0.9595    0.9397    0.9161    0.8888    0.8580    0.8237    0.7861    0.7453    0.7015

Columns 64 through 72
    0.6549    0.6056    0.5539    0.5000    0.4441    0.3863    0.3271    0.2665    0.2048

Columns 73 through 81
    0.1423    0.0792    0.0159   -0.0476   -0.1108   -0.1736   -0.2358   -0.2969   -0.3569

Columns 82 through 90
   -0.4154   -0.4723   -0.5272   -0.5801   -0.6306   -0.6785   -0.7237   -0.7660   -0.8053

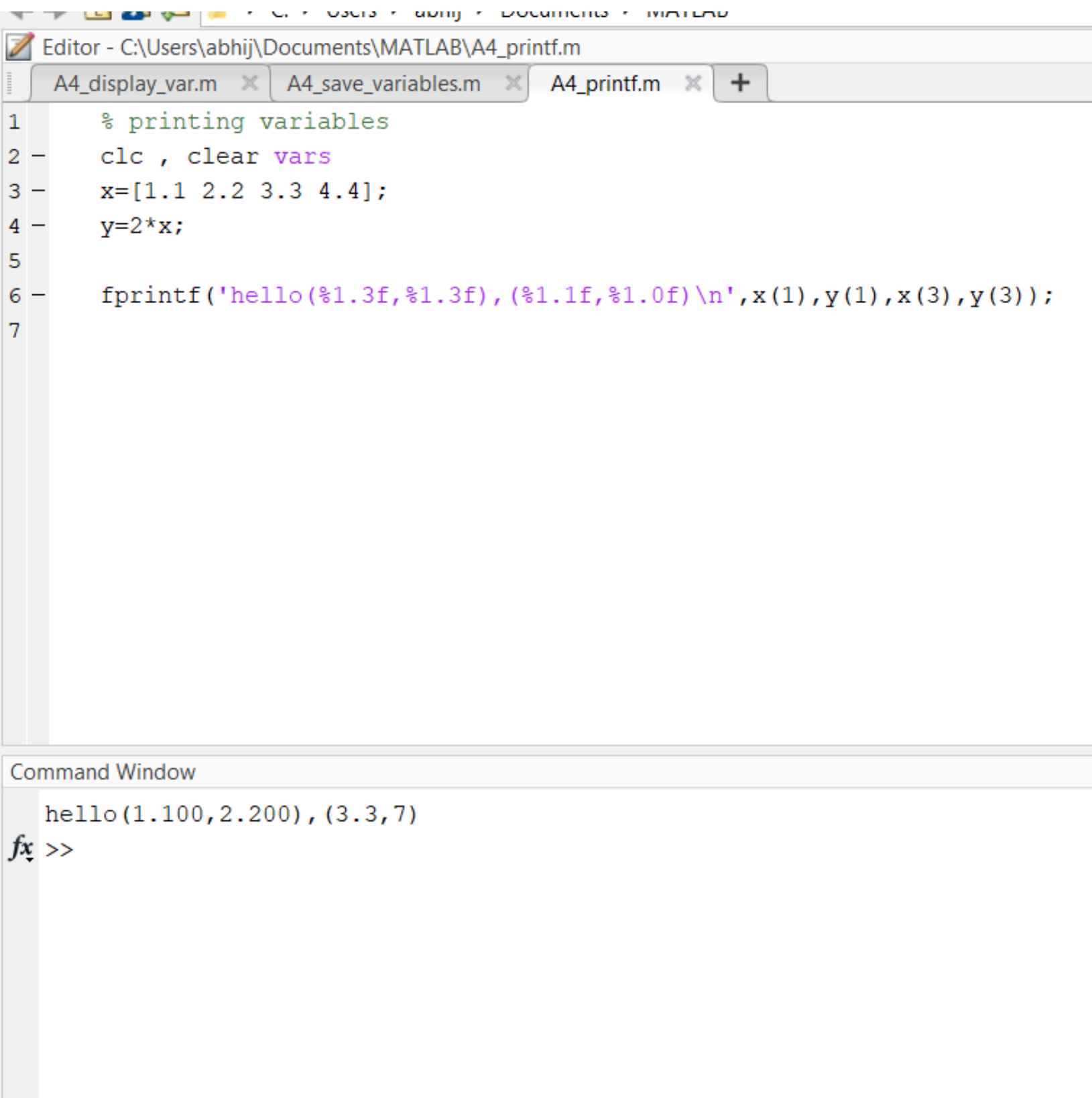
Columns 91 through 99
   -0.8413   -0.8738   -0.9029   -0.9284   -0.9501   -0.9679   -0.9819   -0.9920   -0.9980

Column 100
   -1.0000

ALICE will be 12 this year
```

The Command Window also shows the MATLAB prompt `>>` and the file name `A4_display_var.m`.

fprintf use

A screenshot of the MATLAB environment. The top part shows the Editor window with a file named 'A4_printf.m' open. The code in the editor is as follows:

```
1 % printing variables
2 clc , clear vars
3 x=[1.1 2.2 3.3 4.4];
4 y=2*x;
5
6 fprintf('hello(%1.3f,%1.3f), (%1.1f,%1.0f)\n',x(1),y(1),x(3),y(3));
7
```

The bottom part shows the Command Window with the output of the fprintf function:

```
hello(1.100,2.200), (3.3,7)
fx >>
```

```
Editor - C:\Users\abhij\Documents\MATLAB\A4_printf.m
A4_display_var.m x A4_save_variables.m x A4_printf.m x +
1 % printing variables
2 clc , clear vars
3 x=[1.1 2.2 3.3 4.4];
4 y=2*x;
5
6 fprintf('hello(%1.3f,%1.3f), (%1.1f,%1.0f)\n',x(1),y(1),x(3),y(3));
7
Command Window
hello(1.100,2.200), (3.3,7)
fx >>
```

table arrangement

Editor - C:\Users\abhi\Documents\MATLAB\A4_Table.m

A4_display_var.m

A4_save_variables.m

A4_printf.m

A4_Table.m

```
1      % table arrangement
2      fprintf('-----\n');
3
4      fprintf('%6s |%8s\n', 'INDEX', 'VALUE');
5      fprintf('-----\n');
6
7      for i=1:5
8          a=2*i+1;
9          fprintf('|%4.0f |%8.1f|\n', i, a);
10     end
11     fprintf('-----\n')
```

Command Window

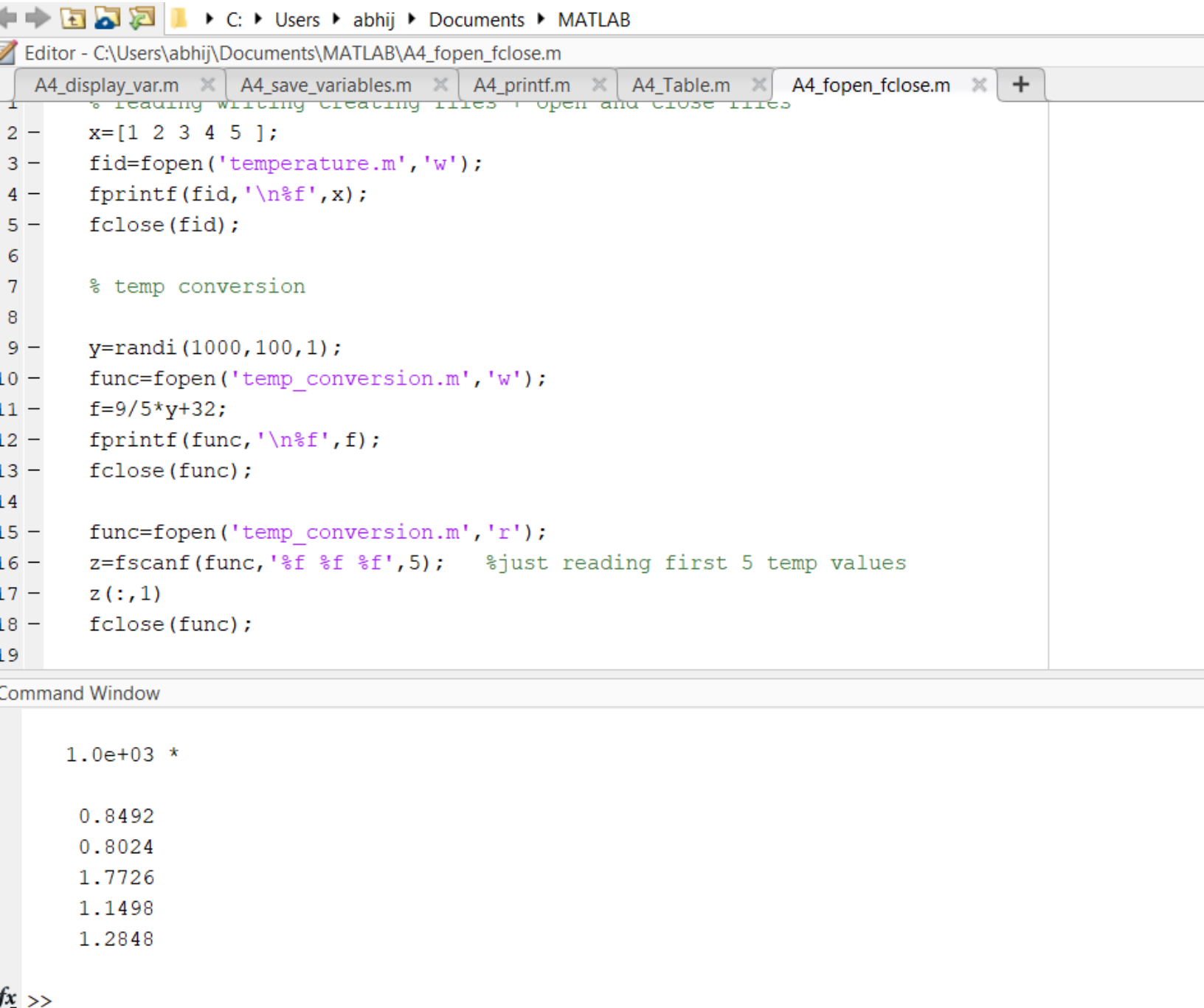
```
-----
INDEX |    VALUE
-----
|  1  |    3.0|
|  2  |    5.0|
|  3  |    7.0|
|  4  |    9.0|
|  5  |   11.0|
-----
```

fx >>

Current Folder

1.file handling--open close read write

2.temp conversion example



The image shows a MATLAB environment with the Editor window open to a file named `A4_fopen_fclose.m`. The code in the Editor performs the following steps:

- Line 2: `x=[1 2 3 4 5];`
- Line 3: `fid=fopen('temperature.m','w');`
- Line 4: `fprintf(fid,'\n%f',x);`
- Line 5: `fclose(fid);`
- Line 7: `% temp conversion`
- Line 9: `y=randi(1000,100,1);`
- Line 10: `func=fopen('temp_conversion.m','w');`
- Line 11: `f=9/5*y+32;`
- Line 12: `fprintf(func,'\n%f',f);`
- Line 13: `fclose(func);`
- Line 15: `func=fopen('temp_conversion.m','r');`
- Line 16: `z=fscanf(func,'%f %f %f',5); %just reading first 5 temp values`
- Line 17: `z(:,1)`
- Line 18: `fclose(func);`

The Command Window displays the output of the `fscanf` operation, showing the first five values read from the file:

```
1.0e+03 *  
  
0.8492  
0.8024  
1.7726  
1.1498  
1.2848  
  
fx >>
```

spreadsheet

The image shows a MATLAB environment with a script editor and a command window. The script editor contains the following code:

```
1 % reading and writing spreadsheet
2 clear vars
3 v={1 2 3; 4 5 'x' ;7 8 9};
4
5 h= { 'first','second', 'third'};
6
7 xlswrite('val.xlsx',[h; v]);
8
9 A=xlsread('val.xlsx')
10
11 columnB=xlsread('val','B:B')
12 xlRange='B2:C3';
13 sheet=1;
14 subsetA=xlsread('val.xlsx',sheet,xlRange)
```

The command window shows the execution of the commands and the resulting matrices:

```
>> A4_spreadsheet

A =

     1     2     3
     4     5    NaN
     7     8     9

>> A4_spreadsheet

A =

     1     2     3
     4     5    NaN
     7     8     9

columnB =

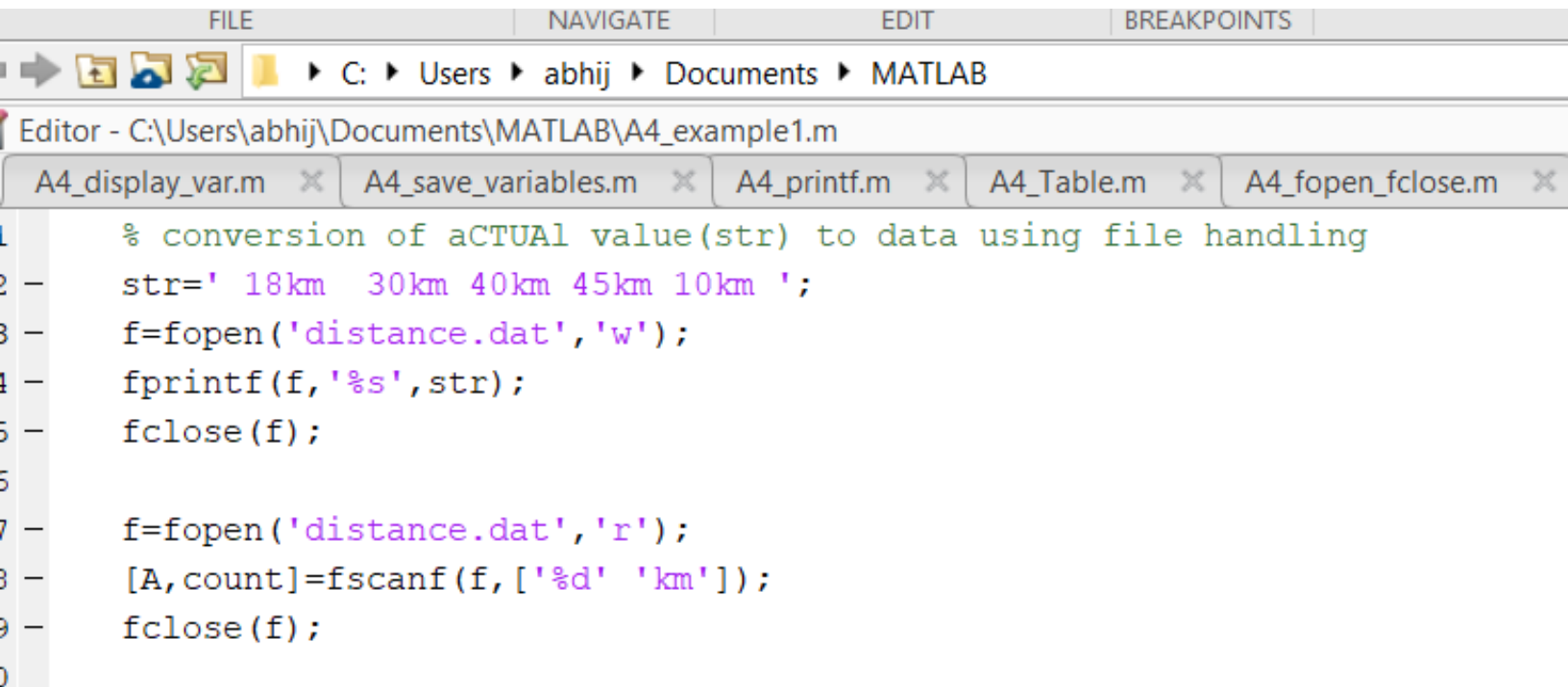
     2
     5
     8

subsetA =

     2     3
     5    NaN
```

The command window also shows the file path: C:\Users\abhi...

ex-1 str to integer data



The image shows the MATLAB Editor window with a script named A4_example1.m. The script performs the following steps: 1. A comment line: '% conversion of aCTUAL value(str) to data using file handling'. 2. A string variable 'str' is assigned the value ' 18km 30km 40km 45km 10km '. 3. A file 'distance.dat' is opened in write mode ('w'). 4. The string 'str' is written to the file using fprintf. 5. The file is closed with fclose. 6. The file 'distance.dat' is opened in read mode ('r'). 7. The fscanf function is used to read the data from the file into a matrix 'A', with the format specifier '%d' and the delimiter 'km'. 8. The file is closed with fclose.

```
1 % conversion of aCTUAL value(str) to data using file handling
2 str=' 18km 30km 40km 45km 10km ';
3 f=fopen('distance.dat','w');
4 fprintf(f,'%s',str);
5 fclose(f);
6
7 f=fopen('distance.dat','r');
8 [A,count]=fscanf(f,['%d' 'km']);
9 fclose(f);
10
```

Command Window

```
>> A4_example1
>> A4_example1
>> A

A =
    18
    30
    40
    45
    10

fx >> |
```


ex-2

table arrangement using filehandling

```
A4_save_variables.m x A4_printf.m x A4_Table.m x A4_fopen_fclose.m x A4_spreadsheet.m x A4_example1.m x A4_example2.m x +
% table arrangement once again using file handling

x=0:.1:1;
A=[x; exp(x)];

f=fopen('exp.txt','w');
fprintf(f,'-----\n');
fprintf(f,'%6s |%8s\n','X','exp(x)');
fprintf(f,'-----\n');
fprintf(f,'%6.2f | %12.5f\n',A);
fprintf(f,'-----\n');
fprintf(f,'-----\n');
fclose(f);
type('exp.txt')
```

Command Window

>> A4_example2

X	exp(x)

0.00	1.00000
0.10	1.10517
0.20	1.22140
0.30	1.34986
0.40	1.49182
0.50	1.64872
0.60	1.82212
0.70	2.01375
0.80	2.22554
0.90	2.45960
1.00	2.71828

f >> |